

Claims

1. A nutritional composition suitable for facilitating bone healing in a mammal, comprising lysine, proline, ascorbic acid, copper, and vitamin B₆.
2. The nutritional composition of claim 1, wherein the nutritional composition contains 27-34 % wt lysine, 14-15 % wt proline, and 42-47 % wt ascorbic acid.
3. The nutritional composition of claim 1, wherein the nutritional composition provides a daily dosage of
 - a) 230 mg – 10 grams lysine, 120 mg - 5 grams proline, 360 mg – 15 grams ascorbic acid, 1.5 µg – 20 mg copper, and 0.2 mg - 20 mg vitamin B₆;
 - b) 1,010 mg – 8 grams lysine, 560 mg - 4 grams proline, 1,500 mg – 9 grams ascorbic acid, 2 µg – 6 mg copper, and 0.5 mg – 10 mg vitamin B₆; or
 - c) 1,010 mg lysine, 560 mg proline, 1,500 mg ascorbic acid, 330 µg copper and 10 mg vitamin B₆.
4. The nutritional composition of claim 1, wherein said composition provides a daily dosage per body weight of
 - a) 3.2 – 139 mg/kg lysine, 1.7 – 69.4 mg/kg proline, 5 – 208.3 mg/kg ascorbic acid, 0.02 – 278 µg/kg copper, 2.78 – 279 µg/kg vitamin B₆;
 - b) 14 – 111 mg/kg lysine, 7.8 – 55.6 mg/kg proline, 20.8 - 125 mg/kg ascorbic acid, 0.03 – 83.3 µg/kg copper, and 6.94 – 139 µg/kg vitamin B₆; or
 - c) 14 mg/kg lysine, 7.8 mg/kg proline, 20.8 mg/kg ascorbic acid, 4.6 µg/kg copper, 139 µg/kg vitamin B₆.
5. The nutritional composition of any one of claims 1 to 4, wherein the nutritional composition further comprises vitamin A, vitamin D₃, vitamin E, vitamin B₁, vitamin B₂, niacin, folic acid, vitamin B₁₂, biotin, pantothenic acid, calcium, phosphorus, magnesium, zinc, selenium, manganese, chromium, molybdenum, potassium, citrus fruit peel bioflavonoids, arginine, cysteine, inositol, carnitine, coenzyme Q₁₀, and pycnogenol.
6. The nutritional composition of claim 5, wherein the nutritional composition provides a daily dosage of

- a) 67 µg -100 mg vitamin A, 0.7 µg - 50 µg vitamin D₃, 0.7 µg - 50 µg vitamin E, 1.4 mg - 8 mg vitamin B₁, 1.4 mg - 8 mg vitamin B₂, 9 mg - 250 mg niacin, 18 µg - 500 µg folic acid, 4 µg - 100 µg vitamin B₁₂, 13 µg - 400 µg biotin, 8 mg - 100 mg pantothenic acid, 7 mg - 40 mg calcium, 3 mg - 300 mg phosphorus, 40 mg - 200 mg magnesium, 0.5 mg - 10 mg zinc, 20 µg - 300 µg selenium, 0.8 mg - 15 mg manganese, 2 µg - 200 µg chromium, 0.8 µg - 100 µg molybdenum, 4 mg - 300 mg potassium, 20 mg - 500 mg citrus fruit peel bioflavanoids, 10 mg - 500 mg arginine, 10 mg - 400 mg cysteine, 5 mg - 400 mg inositol, 5 mg - 400 mg carnitine, 1.6 mg - 70 mg coenzyme Q₁₀, and 1.6 mg - 70 mg pycnogenol;
 - b) 166 µg -50 mg vitamin A, 1.65 µg - 20 µg vitamin D₃, 1.65 µg - 20 µg vitamin E, 3.5 mg - 7 mg vitamin B₁, 3.5 mg - 7 mg vitamin B₂, 22.5 mg - 100 mg niacin, 45 µg - 300 µg folic acid, 10 µg - 50 µg vitamin B₁₂, 32 µg - 300 µg biotin, 20 mg - 60 mg pantothenic acid, 17 mg - 35 mg calcium, 7 mg - 100 mg phosphorus, 50 mg - 100 mg magnesium, 3 mg - 8 mg zinc, 30 µg - 250 µg selenium, 1 mg - 3.25 mg manganese, 2 µg - 75 µg chromium, 2 µg - 75 µg molybdenum, 8 mg - 200 mg potassium, 50 mg - 250 mg citrus fruit peel bioflavanoids, 100 mg - 300 mg arginine, 80 mg - 200 mg cysteine, 80 mg - 200 mg inositol, 80 mg - 200 mg carnitine, 3 mg - 35 mg coenzyme Q₁₀, and 3 mg - 35 mg pycnogenol; or
 - c) 333 µg vitamin A, 3.3 µg vitamin D₃, 3.3 µg vitamin E, 7 mg vitamin B₁, 7 mg vitamin B₂, 45 mg niacin, 90 µg folic acid, 20 µg vitamin B₁₂, 65 µg biotin, 40 mg pantothenic acid, 35 mg calcium, 15 mg phosphorus, 40 mg magnesium, 7 mg zinc, 20 µg selenium, 1.3 mg manganese, 10 µg chromium, 4 µg molybdenum, 20 mg potassium, 100 mg citrus fruit peel bioflavanoids, 40 mg arginine, 35 mg cysteine, 35 mg inositol, 35 mg carnitine, 7 mg coenzyme Q₁₀, and 7 mg pycnogenol.
7. The nutritional composition of claim 5, wherein said composition further comprises in a daily dosage per body weight of
- a) 0.9-1,390 µg/kg vitamin A, 0.01-0.694 µg/kg vitamin D₃, 0.01-0.694 µg/kg vitamin E, 19.4-111 µg/kg vitamin B₁, 19.4-111 µg/kg vitamin B₂, 125-3,472 µg/kg niacin, 0.25-6.94 µg/kg folic acid, 0.05-1.39 µg/kg vitamin B₁₂, 0.181-5.56 µg/kg biotin, 111-1,390 µg/kg pantothenic acid, 97.2-555 µg/kg calcium, 42-4,167 µg/kg phosphorus, 555-2,778 µg/kg magnesium, 6.9-139 µg/kg zinc, 0.28-4.17 µg/kg selenium, 11.1-208.3 µg/kg manganese, 0.03-2.78 µg/kg chromium, 0.01-1.39

- μg/kg molybdenum, 55.6-4,167 μg/kg potassium, 278-6.944 μg/kg citrus fruit peel bioflavanoids, 139-6,944 μg/kg arginine, 135-5,555 μg/kg cysteine, 69-5,555 μg/kg inositol, 69-5,555 μg/kg carnitine, 22.2-972 μg/kg coenzyme Q₁₀, and 22.2-972 μg/kg pycnogenol;
- b) 2.31-694 μg/kg vitamin A, 0.023-0.278 μg/kg vitamin D₃, 0.023-0.278 μg/kg vitamin E, 48.6-97.2 μg/kg vitamin B₁, 48.6-97.2 μg/kg vitamin B₂, 312.5-3,190 μg/kg niacin, 0.6-4.17 μg/kg folic acid, 0.14-0.69 μg/kg vitamin B₁₂, 0.444-4.17 μg/kg biotin, 278-833 μg/kg pantothenic acid, 236-903 μg/kg calcium, 97.2-1,390 μg/kg phosphorus, 694-1,390 μg/kg magnesium, 41.7-111 μg/kg zinc, 0.42-3.47 μg/kg selenium, 13.9-45.1 μg/kg manganese, 0.07-2.78 μg/kg chromium, 0.03-1.04 μg/kg molybdenum, 111.1-2,778 μg/kg potassium, 694-3,472 μg/kg citrus fruit peel bioflavanoids, 1,389-4,167 μg/kg arginine, 1,111-2,778 μg/kg cysteine, 1,111-2,778 μg/kg inositol, 1,111-2,778 μg/kg carnitine, 41.7-486 μg/kg coenzyme Q₁₀, and 41.7-486 μg/kg pycnogenol; or
- c) 4.6 μg/kg vitamin A, 0.046 μg/kg vitamin D₃, 0.046 μg/kg vitamin E, 97.2 μg/kg vitamin B₁, 97.2 μg/kg vitamin B₂, 625 μg/kg niacin, 1.25 μg/kg folic acid, 0.27 μg/kg vitamin B₁₂, , 0.9 μg/kg biotin, , 555 μg/kg pantothenic acid, 486 μg/kg calcium, 208 μg/kg phosphorus, 555 μg/kg magnesium, 97.2 μg/kg zinc, 0.78 μg/kg selenium, 18.1 μg/kg manganese, 0.14 μg/kg chromium, 0.06 μg/kg molybdenum, 277.8 μg/kg potassium, 1,389 μg/kg citrus fruit peel bioflavanoids, 555 μg/kg arginine, 486 μg/kg cysteine, 486 μg/kg inositol, 486 μg/kg carnitine, 97.2 μg/kg coenzyme Q₁₀, and 97.2 μg/kg pycnogenol.
8. The nutritional composition of any one of claims 1 to 7, wherein the mammal is a human.
9. A pharmaceutical composition comprising the nutritional composition of any one of claims 1 to 8.
10. Use of the nutritional composition of any one of claims 1 to 8 for the preparation of a pharmaceutical composition for facilitating bone healing in a mammal.
11. The use of claim 10, wherein said mammal is a human.

12. The use of claim 10 or 11, wherein said composition is to be administered orally, intravenously or parenterally.